REMARKS

Claims 1 - 4, 6, 7 and 9 - 20 are pending in the application. The Office Action rejects claims 1 - 4, 7, 9, 13 - 16, and 18 - 20 under 35 U.S.C. §103(a) as being unpatentable over *McLeod, et al.* (*"McLeod,"* U.S. Publication No. 2002/0004694) in view of U.S. Patent No. 5,592,296 to *Pye*. The Office Action also rejects claims 10 and 12 under 35 U.S.C. §103(a) as being unpatentable over *McLeod* in view of *Pye* as applied to claim 1, in further view of *Vojtisek-Lom* (*"Vojtisek-Lom,"* U.S. Patent No. 6,435,019). The Office Action rejects claim 11 under 35 U.S.C. §103(a) as being unpatentable over *McLeod* in view of *Pye* as applied to claim 1, in further view of *Doyle* (*"Doyle,"* U.S. Pub. No. 2003/0159044). Finally, claims 6 and 17 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Telephone Interview

Applicant would like to thank the Examiner for the Telephone interview on May 12, 2009. During the interview, Applicant and the Examiner discussed the *McLeod et al.* reference. The Examiner has taken the position that *McLeod et al.* discloses a base station, a gas sensor, and display device each including a wireless real-time data transmitter and receiver. It is also the Examiner's belief that *McLeod et al.* discloses that the gas sensor and display device are detachable from the base station for independent use and each include power packs to provide the necessary power when they are remote from the base station. The Examiner pointed to the following language in *McLeod et al.* to support this contention:

> Each device within the modular vehicle diagnostic system may execute functions that are related to vehicle diagnosis and/or signal processing. A device may have a local control system, i.e., all of the hardware and/or software for controlling the device is within the device, or may receive control commands or a control program from another module or device.[1]

The Examiner relies on the fact that *McLeod et al.* uses the term "may" in the description. Thus, the Examiner concludes that each device "may" also operate remotely and independently of each other.

[1] U.S. Pub. No. 2002/0004694, Paragraph [0064].

Applicant respectfully disagrees with the Examiner's position since *McLeod et al.* fails to teach or disclose a gas sensor and display device that

(1) each include a wireless real-time data transmitter and receiver,

(2) are detachable from the base station for independent use and

(3) each include power packs to provide the necessary power when they are remote from the base station.

At the conclusion of the telephone interview, it was agreed that Applicant would submit a response and that the Examiner would consider the arguments in view of the telephone interview.

Claims 1 and 13, 35 USC 103(a) McLeod et al. in view of Pye

McLeod, et al. alone, or in combination with *Pye,* fails to teach or disclose each and every limitation as set forth in the independent claims.

Independent claim 1 calls for, among other things,

> a base station, a gas sensor, and display device each including a wireless real-time data transmitter and receiver . . . and *wherein the gas sensor and display device are detachable* from the base station *for independent use* and *each* include *power packs* to provide the necessary power when they are remote from the base station.

Independent claim 13 calls for, among other things,

> a base station, a gas sensor, and a remote hand portable display device *each being detachable from the base station for independent use*, and wherein the base station, sensor and display device further include at least one of a radio transmitter and receiver.

The examiner has failed to make a prima facie rejection of the independent claims because the references cited fails to teach or disclose a gas sensor and display device that

(1) each include a wireless real-time data transmitter and receiver,

(2) are detachable from the base station for independent use and

(3) each include power packs to provide the necessary power when they are remote from the base station.

McLeod et al. is directed to a modular automotive diagnostic system that is made up of a plurality of devices substantially enclosed by individual housings that are selectively interconnected for sensing or receiving selected signals from a vehicle. The devices are

interconnected by conjoining mechanisms associated with the individual housings and/or having communication channels between them.[2]

The background of the invention describes the state of the prior art and the shortcomings found in the prior art. In particular, the background states that

> [t]he continual improvement of the automobile has created a challenge for diagnostic and repair shops. Much of the diagnostic equipment that is cutting edge today will very likely have to be updated within a few years. In extreme cases, repair shops abandon or sell (usually at a loss) old equipment and obtain new equipment. [3]
>
> Many repair shops that service a variety of vehicle repair needs find that the service equipment takes up a lot of floor space. This may be because some vehicle repair equipment manufacturers prefer to continue to house the equipment in large, floor standing housings. Also, each piece of service equipment may have its own sets of vehicle probes, keyboard, and display screen. Obviously, if more equipment is present, more time and money will be required to keep the equipment functional and more training will be required to keep service people familiar with the different service equipment protocols. [4]

Figures 1 and 2 illustrate the possible interconnections between several devices of the modular diagnostic system. Moreover, Figures 20 – 25 show the user interface and various modules in a conjoined relationship.

To further support Applicant's position that *McLeod et al.* is only directed to a modular system where the individual modules are inoperative apart from the docking station, paragraphs [0187] – [0198] are specifically dedicated to describing the modular nature of the *McLeod et al.* invention. In particular, the specification states that

> the devices of the modular vehicle diagnostic system may be selectively conjoined. . . . A conjoining mechanism may provide or facilitate a desired feature of the modular vehicle diagnostic system. For example, a mechanism may facilitate the establishment of a hardware communication channel and/or maintain a structural concept. For example, it is desirable that the vehicle diagnostic assemblies of the preferred embodiment be portable and readily operable by a single operator, i.e., handheld. [5]
>
> The several devices of the preferred embodiment are housed separately. User interface unit housing 600 is of a generally rectangular shape that includes side

[2] U.S. Pub. No. 2002/0004694, Abstract.
[3] *See id.* at paragraph [004].
[4] *See id.* at paragraph [006]
[5] Paragraph [0187]

surface 602 opposite user interface surface 616. User interface surface 616 includes display and touch screen interface 618. Side surface 602 has a slot or aperture 604 formed therein. In the present embodiment, aperture 604 includes a left side 606 and a right side 608 and terminates at an open end 610 and closed end 612. Closed end 612 includes a male electric connector 614 that provides a hardware interface for interconnection to other devices of the modular vehicle diagnostic assembly. Aperture 604 is formed to provide an opening that corresponds to the shape of one or several other modular vehicle diagnostic system devices.[6]

In the present embodiment, gas analysis module 58 also has a housing with key tabs for insertion in a slot in the user interface.[7]

Based on the background, summary of the invention, description of the figures and the detailed description, *McLeod et al.* describes a system that overcomes the shortcomings of prior art diagnostic systems by providing a small handheld modular interface unit. That is, in prior art systems, a separate bulky system was necessary for different diagnostic tests. These systems required costly updates, were expensive to purchase and occupied valuable shop space. *McLeod et al.* sought to provide a modular system that allows shop owners to purchase a user interface that receives various diagnostic modules, was small and portable and that was easy and inexpensive to upgrade.

In further support of the modular design, the specification states that

[t]his invention pertains to modular vehicle diagnostic systems for sensing or receiving selected signals from a vehicle, for selecting vehicle parameters for vehicle diagnosis or evaluation, for accordingly processing the signals, and for displaying the vehicle parameters. A plurality of constituent diagnostic and/or signal processing devices [ ] may be selectively combined to form a vehicle diagnostic assembly . . .. Two or more devices may be interconnected to produce a single-function or multi-functional vehicle diagnostic assembly unit.[8]

Two or more constituent devices may be interconnected by conjoining integral parts of the devices, such as the housings, and/or by providing or establishing one or more electronic communication channel(s) between the devices. . . . It is preferred that the devices are conjoined with interlocking mechanisms of the type that are at least partially securable to prevent the devices from separating under normal use. For example, in a handheld system, such a secure interlock would allow the operator to grasp any part of an assembly unit and thereby obtain control of all of the interlocked devices. The devices may be conjoined

[6] Paragraph [0188 – 0189]
[7] Paragraph [0195]
[8] *See id.* at paragraph [0041 - 0042]

by mating, joining, locking, linking, binding, clasping, or through some other connecting mechanism or technique. For example, the devices may include complementary channels for mating and rotary locking latches, slot and tab assemblies, or Velcro strips affixed to the housings.[9]

Figure 1 discloses a block diagram of a modular vehicle diagnostic system 10 having several devices 14, 16, 18, and 20 that may be interconnected.[10] Each individual device 12-20 may support one or more application(s) for a vehicle diagnostic/evaluation system. For example, the devices within the diagnostic system may include a user interface unit, vehicle signal and data interfacing modules, vehicle signal and data preconditioning modules, and auxiliary components.[11] Devices of the preferred embodiment are configured to facilitate interconnection. The devices may include reciprocating structure, as illustrated by tabs 30 and 34 and slots 28 and 32, for conjoining the housings of two or more devices. The devices may also be interconnected through communication channels.[12] For modules not otherwise interconnected, exclusive communication channels 42 and 36 may be provided for establishing a signal path between two devices that may or may not be connected to other devices. [13] Because the system is modular in design, each device may have a local control system, i.e., all of the hardware and/or software for controlling the device is within the device, or may receive control commands or a control program from another module or device.[14]

Referring to Figure 2, the system includes a user interface unit 48, diagnostic module 50 and scan module 52, an amplification module 54, a programmable break-out box module 56, ignition signal receiver module 64, a docking station 60 and auxiliary components 58 and 62, which may be selectively combined. User interface unit 48 may have a data processor, display, operator input components, and communication ports for inputting and outputting data and operating commands to and from devices within the system and/or other devices. The user interface unit may have a housing that facilitates selective interconnection to system devices.[15] Diagnostic and scan modules 50 and 52 send and receive operating commands, data, and signals. Accordingly, the interfacing modules may transfer data and signals between vehicle

[9] *See id.* at paragraph [0047 – 0048]
[10] *See id.* at paragraph [0051]
[11] *See id.* at paragraph [0052]
[12] *See id.* at paragraph [0060]
[13] *See id.* at paragraph [0061 – 0062]
[14] *See id.* at paragraph [0064]
[15] *See id.* at paragraph [0066 – 0067]

format and user interface unit format and may also include preprogrammed memory. An interfacing module may also include a data processor for calculating vehicle performance parameters or performing other functions.[16]

The amplification module 54, programmable break-out box module 56, ignition signal receiver module 64, docking station 60 and auxiliary components 58 and 62 process signals sent and received between the vehicle and the vehicle signal and data interfacing modules. The preconditioning modules may process data and signals between forms suitable for vehicle or vehicle components and forms suitable for vehicle signal and data interface modules.[17] Auxiliary components 58 and 62 include devices such as digital processors, microprocessors, signal generators, and memory components for transferring, storing, and/or processing diagnostic data and/or control signals to/from the user interface unit, system devices, or vehicle.[18] In an alternate embodiment, the user interface unit includes ports for directly receiving vehicle signal scope lead input signals.[19]

The specification also describes other functions that may be carried out by user interface 48 and the various conjoined modules. For example, the assembly formed by conjoining diagnostic module 50 with user interface unit 48 preferably also functions as a digital multi-meter (DMM) for measuring resistance, current, and DC and AC voltages.[20] Moreover, the assembly preferably also functions as a signal generator for simulating vehicle signals.[21]

McLeod et al. describes one type of auxiliary module as a gas analysis module, which receives vehicle emission gases, measures the amount or concentration of one or several selected gases, and outputs a signal or signals representative thereof. With reference to Figure 2, gas analysis module 58 receives samples of vehicle exhaust via exhaust intake hose 82, analyzes emission samples, generates data signals, and/or provides signals to other devices within the modular vehicle diagnostic system. Gas analysis module 58 outputs digital data signals representative of exhaust gas concentrations to user interface unit 48 via serial

[16] *See id.* at paragraph [0068]
[17] *See id.* at paragraph [0069]
[18] *See id.* at paragraph [0070]
[19] *See id.* at paragraph [0078]
[20] *See id.* at paragraph [0094]
[21] *See id.* at paragraph [0095]

communications channel 70.[22] In the preferred embodiment, gas analysis module 58 is in serial communication with user interface unit 48. User interface unit 48 provides control signals to gas analysis module 58, which in turn responsively generates and outputs exhaust sample data. Exhaust data is processed by the user interface unit for display or vehicle condition or performance evaluation.

In reviewing the *McLeod et al.* disclosure in total, there is neither a disclosure nor teaching to have a gas sensor apart from the display device and the base station without a wired connection or elongated tubing between the sensor and the gas analysis module in the modular interface unit 48. Instead, the gas sensor module and the display are both physically part of the modular interface unit 48 during use. As a result, a long hose must connect the interface unit gas analyzer module and the sensor probe that is placed in the vehicle tail pipe. Such a connection prevents the user from closing themselves off from the exhaust fumes. Additionally, the very use of an elongated tube prevents the gas sensor from being used independent of the display device since they are physically connected at all times.

Additionally, there is neither a teaching nor disclosure for a wireless gas sensor or a wireless remote hand portable display device to each have there own power packs to provide the necessary power when they are remote from the base station, as required by the claims. In particular, paragraph [158] states that

> [g]as analysis module 58 may also provide power to other modular vehicle diagnostic system devices. In the presently-preferred embodiment, the gas analysis module receives power from the vehicle battery. Power for the other devices is provided at power terminal 510.

This paragraph indicates that the gas sensor receives power from the vehicle battery. Such power source is no different than plugging the gas sensor into a wall outlet since it does not make the gas sensor self contained for portable use. That is, *McLeod et al.* teaches the use of an external power source to power the gas sensor.

The Examiner admits that *McLeod et al.* fails to teach a gas sensor having its own power pack, but asserts that *Pye* teaches a gas sensor having a battery. However, *Pye* fails to remedy the deficiencies found in *McLeod et al.* In particular, *Pye* fails to teach or disclose a

[22] *See id.* at paragraph [0158]

gas sensor having a transmitter and receiver that is detachable from a base and a portable display device for independent use. Moreover, the combination of *Pye* and *McLeod* would result in a modular user interface having a battery, and not a gas sensor having its own battery. That is, in such a combination, one would place the battery of *Pye* in the user interface of *McLeod* since the user interface is used apart from the base station 60 and not the gas sensor apart from the user interface. This is especially true since *McLeod et al.* only discloses that the user interface 48 and gas analysis module 58 are combined and not used independent of each other.

Based on the entire disclosure of *McLeod et al.* there is neither a teaching nor disclosure of having a gas sensor that is independent of a display device as required by the claims. Instead, *McLeod et al.* seeks to overcome the shortcomings found in prior art systems by providing a modular testing system that receives various modules. In this configuration, if a module becomes obsolete only the specific module must be replaced instead of replacing or servicing the whole system. Moreover, only modules that are needed by the user must be purchased. For example, if emission testing is not performed, there would be no reason for the user to purchase and install such a module. Additionally, there is no disclosure or teaching for the gas module to have its own battery since its always part of the user interface. For at least this reason, *McLeod et al.*, alone or in combination with *Pye*, fails to teach or disclose each of the limitations of the independent claims.

CONCLUSION

For at least the above reasons, independent claims 1 and 13 are allowable over *McLeod et al.*, alone or in combination with *Pye, Doyle or Vojtisek-Lom*. Dependent claims 2 – 4, 6 – 7, 9 – 12 and 14 – 20 directly or indirectly depend from independent claims 1 and 13. These dependent claims recite further limitations and are allowable in their respective combinations. Favorable action and withdrawal of the present rejectipons and objections is, therefore, respectfully requested since these claims are dependent on allowable independent claims 1 and 13.

Respectfully submitted,

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